

WHAT IS CLAIMED IS:

1. An active diffracted sound control apparatus comprising:

sound source measuring device arranged on the object sound source area side of a wall body arranged between the object sound source area and a sound receiving area for measuring the object sound information in the neighborhood of the wall body;

5 direct object sound measuring device arranged on the sound receiving area side of the wall body for measuring the object sound information in the neighborhood of the wall body;

10 a control sound source arranged in the neighborhood of the wall body for generating a control sound to reduce the object sound at a virtual object sound measuring point in the sound receiving area; and

15 object sound control device for controlling the output of the control sound based on the output of the object sound measuring device;

20 wherein the object sound control device is operated on the basis of a first sound transmission characteristic between the direct object sound measuring point for the object sound source and the virtual object sound measuring point and

25 a second sound transmission characteristic between the direct object sound measuring point for the control sound source and the virtual object sound measuring

point.

2. An active diffracted sound control apparatus according to claim 1,

5 wherein the object sound control device alternates between a control section for generating the control sound and an identification section for obtaining a third sound transmission characteristic between the object sound source measuring device and the direct sound measuring device.

10 3. An active diffracted sound control apparatus according to claim 1,

15 wherein the sound source measuring device, the direct object sound measuring device and the control sound source are configured integrally and installed removably on the wall body.

4. An active diffracted sound control apparatus according to claim 1,

wherein the control sound source is arranged at the upper end portion of the wall body, and

20 wherein the direct object sound measuring device is arranged within the distance of the shortest wavelength of the frequency of the object sound from the upper end portion of the wall body.

5. An active diffracted sound controller comprising:

25 sound source measuring device arranged on that part of a wall body having an opening between

a controlled sound source area and a sound receiving area which is nearer to the controlled sound source area for measuring the controlled sound information in the neighborhood of the opening;

5 direct controlled sound measuring device arranged on the part of the opening nearer to the sound receiving area for measuring the controlled sound information in the neighborhood of the opening;

10 a control sound source arranged in the neighborhood of the opening for generating a control sound for reducing the controlled sound at a virtual controlled sound measuring position in the sound receiving area; and

15 controlled sound control device for controlling the output of the control sound based on the output of the controlled sound measuring device;

20 wherein the controlled sound control device is operated based on a first sound transmission characteristic of the controlled sound source between the direct controlled sound measuring position and the virtual controlled sound measuring position, and a second sound transmission characteristic of the control sound source between the direct controlled sound measuring position and the virtual controlled sound measuring position.

25 6. An active diffracted sound controller according to claim 5,

wherein the controlled sound control device is
operated alternately in a control section for
generating a control sound and an identification
section for producing a third sound transmission
5 characteristic of the controlled sound source between
the controlled sound source measuring device and the
direct sound measuring device.

7. An active diffracted sound controller
according to claim 5,

10 wherein the sound source measuring device, the
direct controlled sound measuring device and the
control sound source are configured integrally and
adapted to be arranged removably on the opening.

15 8. An active diffracted sound controller
according to claim 5,

wherein the control sound source is arranged at
the upper end portion of the wall body; and

20 wherein the direct controlled sound measuring
device is arranged within the distance of the shortest
wavelength of the frequency of the controlled sound
from the edge portion of the opening.

9. An active diffracted sound control method
comprising:

25 a sound source measuring the controlled sound
information at a sound source measuring position in the
neighborhood of that part of a wall body which is
nearer to the controlled sound source area, the wall

body being arranged between the controlled sound source area and the sound receiving area;

a direct controlled sound measuring the controlled sound information at a direct controlled sound

5 measuring position in the neighborhood of that part of the wall body which is nearer to the sound receiving area;

10 a control sound generating a control sound, at a control sound generating position in the neighborhood of the wall body, for reducing the controlled sound at a virtual controlled sound measuring position in the sound receiving area; and

15 a controlled sound controlling the output of the control sound based on the output from the information of the controlled sound measured in the direct controlled sound measuring ;

20 wherein the controlled sound controlling is operated based on a first sound transmission characteristic of the controlled sound between the direct controlled sound measuring position and the virtual controlled sound measuring position, and a second sound transmission characteristic of the control sound between the direct controlled sound measuring position and the virtual controlled sound measuring position.

25 10. An active diffracted sound control method according to claim 9,

wherein said controlled sound controlling is
executed alternately in a control section for
generating a control sound and an identification
section for producing a third sound transmission
5 characteristic of the controlled sound between the
controlled sound source measuring position and the
direct sound measuring position.

11. An active diffracted sound control method
according to claim 9,

10 wherein the control sound generating position is
at the upper end portion of the wall body, and
wherein the direct controlled sound measuring
position is within the distance of the shortest
wavelength of the frequency of the controlled sound
15 from the upper end portion of the wall body.

12. An active diffracted sound control method
comprising:

20 a first sound transmission characteristic
measuring a first sound transmission characteristic of
the controlled sound between the direct controlled
sound measuring position in the neighborhood of the
part of the wall body nearer to the sound receiving
area and the virtual controlled sound measuring
position on the part of the wall body nearer to the
25 sound receiving area, the wall body being arranged
between the controlled sound source area and the sound
receiving area;

a second sound transmission characteristic
measuring a second sound transmission characteristic of
the control sound between the direct controlled sound
measuring position and the virtual controlled sound
5 measuring position;

a sound source measuring the controlled sound
information at a sound source measuring position in the
neighborhood of the part of the wall body nearer to the
controlled sound source area;

10 a direct controlled sound measuring the controlled
sound information at the direct controlled sound
measuring position;

15 a control sound generating a control sound at a
control sound generating position in the neighborhood
of the wall body for reducing the controlled sound at
the virtual controlled sound measuring position; and

a controlled sound controlling the output of the
control sound based on the output from the information
of the controlled sound measured in the direct
20 controlled sound measuring, the first sound
transmission characteristic and the second sound
transmission characteristic.

13. An active diffracted sound control method
according to claim 12,

25 wherein the controlled sound controlling is
executed alternately between a control section for
generating the control sound and an identification

section for producing a third sound transmission characteristic of the controlled sound between the controlled sound source measuring position and the direct sound measuring position.

5 14. An active diffracted sound control method according to claim 12,

10 wherein the control sound generating position is at the upper end portion of the wall body, and the direct controlled sound measuring position is within the distance of the shortest wavelength of the frequency of the controlled sound from the upper end portion of the wall body.